THE

HOME FRIEND;

A WEEKLY MISCELLANY OF AMUSEMENT AND INSTRUCTION

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A VISIT TO AUSTRALIA AND ITS GOLD REGIONS (*continued*).

NATIVES OF AUSTRALIA.

THE city of Adelaide, on entering it from the bridge over the Torrens, presents rather an imposing appearance, and still more impresses a Londoner with the idea of "home." The numberless vehicles of all descriptions, drays with sturdy horses, tradesmen's carts, omnibuses, stage-coaches, conveyance carts, barouches, and gigs, with the busy throng of foot-passengers, the fine shops, many of which would be no disgrace to Regent-street, make it difficult for an Englishman to believe that he is many thousand miles away from his own country. The city is a large place, not yet nearly built over; the majority of houses existing at the present time were built for persons of small means, mainly constructed of nine-inch brick-work, with roofs of shingles from Van Diemen's Land, in many instances

so neatly put together as to render it impossible at a short distance to distinguish them from slates. Besides these humbler dwellings, there are many of a higher character; such as the Bank of Australia, which is a magnificent building; and the new Post-office, which is a St. Martin's-le-Grand on a smaller scale.

In no other of the Australian possessions yet occupied are there so many capabilities for profitable occupation. There are large tracts of country bearing excellent crops of rich grass, and for miles destitute of a single tree, which afford the finest pasturage for hundreds of thousands of sheep and cattle. There are immense forests of serviceable trees, many of them rising to the height of forty or fifty feet from the ground to the lowest branch, and affording employment for a vast number of splitters, sawyers, fencers, hurdle-makers, carters, carpenters, charcoal-burners, and persons who supply fuel. There are also considerable tracts of the finest arable land in the world, capable of growing, in the utmost perfection, wheat, barley, oats, maize, hops, and all kinds of fruits and vegetables; and it is said that the finest wheat ever exhibited in the London Corn Market was exported from this colony. There are many profitable whale-fisheries upon the coast, and the mineral districts of the colony are unrivalled for their richness. There are mines of lead, tin, copper, silver, emery, plumbago, and iron; and although a productive gold "digging" has yet to be discovered, gold has certainly been found; and there is little doubt, considering the numbers who are tempted to explore the country by the promise of 1000*l.* reward, that the country will not long remain without the attraction of a gold mine. There are stone quarries, supplying excellent material in the greatest abundance; and slate quarries, not of blue slate only, but of a peculiar kind of white slate-stone, which splits off in large slabs, and is as soft as the blue slate, and can therefore be easily worked. There is also a blue marble, which works well, and is of great utility; and limestone fit for burning is found in almost every district. The discovery of coal only is requisite to make the list as complete as it is valuable.

It is mainly to the mineral riches of the colony that South Australia owes its prosperity and importance. It was in the year 1844 that the existence of mineral wealth began to attract universal attention. "In 1844," says Mr. Wilkinson, "a loaded dray coming down a steep hill in sight of the town, which was distant about three miles, was obliged to have a large tree dragging behind it to prevent its rushing upon the team of bullocks. This tree, coming into violent contact with a rock or stone at the side of the road, shattered off some portions, and revealed to sight a bright silvery substance, which, on being shown to people acquainted with minerals, was pronounced to be lead-ore, or galena. As if a spark of fire had fallen amongst gunpowder, every one was on the *qui vive*, and the excitement was intense. The specimens were stared at, and examined, and tested in every way. Masses of people crowded about the spot from which they had been severed; and, armed with chisels, axes, hammers, everything, in fact, that would break the stone, they all set to work. Never, perhaps, was a hill so knocked about. Worthless stones were slily pocketed and taken home for secret examination. The utmost caution was observed by those who had a bit of stone discoloured by damp or exposure to the atmosphere. All holders of land-orders looked anxiously at their number, as it was found that the possessor of the oldest order gained the prize. At one time No. 307 was sure to win, then No. 274 turned up; he could sell

his chance for a very large sum, but, like a clever man he stuck to his chance—and lost; for No. 180 was now found; and so it went on, until the land was delivered up to the fortunate possessor of the proper order. Then the sinking a shaft was commenced, and after all the fuss the mine was found to be almost valueless. It had, however, the effect of setting every one to work hunting about among rocks and stones, over hill and dale, amongst the watercourses, and plains, when it was found that the whole country, north, south, and west, was extensively scattered over with valuable minerals. Copper was found in large quantities and in every direction; every person carried his pocketful of specimens; no other subject was talked of in all societies, and the whole population seemed to be in danger of running as mad about minerals as they had been before about the town lands."

The first important mine discovered was that called the Kapunda; but not long after, a union of all parties in Adelaide caused a special survey of 20,000 acres to be made, which almost drained the colony of money to pay the requisite sum of 20,000*l.* in due time. The survey having been completed, the parties agreed to divide the land into two portions, the officials and gentlemen taking one ten thousand acres, and the tradesmen the other. A toss-up decided the question; to the tradesmen fell the half called Burra Burra, to the officials the other, named Princess Royal. The former has a world-wide reputation; whilst the name of the other is unknown except in the immediate locality. The shares of the one have sold for as much as fifty times the original price, while those of the other are at about 75 per cent. discount.

The mining operations at Burra Burra were commenced in September 1845, and the ore was found cropping out of the ground in large masses of many thousand tons' weight; and so rich, that much of it yields an average of 65 per cent. pure copper; and it is rather singular that a squatter, who had been living and folding his sheep over the ground, never noticed its existence. In the first year 6,359 tons were raised; and 10,745 in the second. In May 1847, the first dividend was paid—50 per cent.; followed by another of the same amount in the ensuing month: since which time the progress of the mines has been one of constantly-increasing prosperity, until the discovery of the gold regions in the adjacent colony of Victoria, drawing away the miners, has left the proprietors without labourers. This has, up to the latest news, reduced the dividends, and also the price of shares.

The following description of the Burra Burra appeared in the Adelaide papers:—

"Proceeding from Mr. Wren's hotel we passed through a gorge of the northern hill, and in a few minutes found ourselves in view of the 'eighth wonder of the world.' The Burra mines are chiefly in a basin about fifty acres in extent, nearly surrounded with low hills lying confusedly around; confused and irregular hills are indeed the prevailing feature of this district. The workings, however, are comprised in the space of little more than six acres; but this space on a working day is a most animated and astonishing scene. The first thing that strikes the eye are immense piles of earth intersected with vast heaps of ore laid out in a similar style to the broken stones on a macadamized road. Over the heaps are placed five or six great horse-whims, some of which ply night and day. One, in particular, at Kingston Shaft, never rests except on Sundays. During the night it raises ore, and during the day it raises water for cleaning it. No less than

thirty shafts have been sunk, most of them to the water, and of course the operations downwards must be suspended till a steam-engine, which has been ordered, arrives.* The deepest shaft is the Kingston, which is sunk thirty-five fathoms below the surface, and which contains ten fathoms of water. Between the shafts are the sheds for separating and washing the ore. The ore is washed on a very simple principle. A lever and rod are suspended above troughs filled with water, and a sieve containing the ore is attached to the rod. The cleaner, by jerking the sieve up and down in the water, causes the ore—the heavier body—to sink, and the refuse on the surface is then taken off. It was stated by good authority that there was sufficient ore then on the surface, independent of what was on the road, at the port, on shipboard, or in England, to pay the shareholders 200 per cent. (25,000*l.*) every month for nearly twelve months. The average quantity taken away during the last few weeks has been nearly 100 tons per day; and, as the quantity brought from the mine to the surface is upwards of 80 tons daily, very little impression is made on the accumulations at the mine. We will now attempt to relate our labours in threading the mazes of the vast *souterrain*. We can assure those who read this, that it is not every one who can do it. The man who attempts such a great enterprise should be young and active, should be sound and lithe in limb, and should possess good lungs, and no little perseverance. Above all he should not be stout, as some of the holes are so narrow that not more than thirteen stone can squeeze through, unless it belongs to a practical miner. You descend and find it only twenty fathoms; you follow on through galleries dotted with copper, down little shafts, and into great vaults and chambers, and caverns, like Vulcan's forge, where men are seen with candles in their hats or stuck on the rocks, hewing away at the most splendid copper ores that eyes ever beheld. Ever and anon we came to beautiful little malachite arbours, which the miners called their gardens, every side being of a bright emerald green, and forming delightful spots in which to rest. A few of the miners grumbled because they had only 1*s.* 3*d.* per pound of tribute (from this sum the tribute ranges to 2*s.* 6*d.*), and protested that they did not make quite 10*l.* per month; but an old Cornish and Columbian captain, unconnected with the miners, who was present, told us that the miners were habitual grumblers; and we learned afterwards that some of them made as high as 40*l.* or 50*l.* per month, and that the superintendent sends as much as 200*l.* or 300*l.* in a week to Adelaide to invest for the fortunate and industrious. We must, however, mention, for the honour of the men, that the grumblers are a small exception. In some of the vast caverns thirty, forty, and fifty feet wide, when surrounded on every side with malachite, red oxide, and green and blue carbonates mingled in rich confusion, the miners asked our experienced friend if he had ever seen or heard of anything like the Burra, and were evidently not in the least surprised at his energetic negative. After four or five hours' hard travel through this labyrinth we reascended, leaving still a very large portion of the mine unexamined."

The Burra Burra mine, however, though the most valuable, is not the only one which is in working order. There are several others, as the Montacute, the Murkurta, the Yattagolinga, which will all at one time or other become of great value to the colony. In one of these mines, a short

* The *South Australian Register*, for July 1851, announced, under the head of "Arrival of the Monster Engine," that it had reached the colony in the ship "Joseph Weir," which was principally freighted with the several parts of the engine, and other machinery for the mine.

time after the section on which it was situated had been purchased, while sinking a shaft in search of copper, one of the men suddenly broke in upon a vein of metal of a bright yellow colour, totally different in appearance from copper, and which was imbedded in a dark chocolate-coloured earth. The vein was about two inches wide, yielding metal in the proportion of about a quarter of an ounce to an inch, and showing a tendency to enlarge in size. An analysis of this metal proved it to be gold; and although the specimen tested was simply separated from the matrix by the fingers, but not washed or otherwise purified, it yielded ninety-four per cent. of pure gold. This was in the early part of 1846—more than six years ago; but, although the product of this discovery has not been of much practical importance, it had the effect of demonstrating that South Australia, in communion with the sister colonies, possesses a share of auriferous treasures.

The state of affairs at the present time in Adelaide, in consequence of the abundance of gold found in the neighbouring colony of Victoria, is certainly by no means pleasant. The following extract, from the circular of Messrs. J. Stebbings & Co., of Adelaide, dated February 2nd of this year, gives us a vivid impression of the present state of the colony, while it also shadows forth hopes of greater prosperity for the future:—

"The excitement caused by the gold-finding among the inhabitants of this colony has been intense, nearly the whole of our labouring population having left, and those who have not yet done so, intend leaving as soon as possible. The principal part of our male adult population consisted of about 17,000 from twenty-one to forty-five years of age; and it is computed that out of this number 10,000 have left the colony within the last few months. There were from twelve to fifteen vessels regularly laid on at Port Adelaide for passengers to the Victoria diggings, and from 1,000 to 1,500 souls were leaving the colony weekly. But few females have hitherto left, though they are now beginning to leave. Such a flood of emigration from this place is producing the most disastrous results. The average drain of specie from each of our three local banks, exclusive of the Savings' Bank, is just now from 40,000*l.* to 50,000*l.* weekly. Trade is completely stagnated; the stores of the port are filled with wool, copper, tallow, &c., all waiting for shipment. Owing to the scarcity of labour, it is with the utmost difficulty anything can be put on board ship. Seamen are obtaining from 10*l.* to 15*l.* per month for the run to London; and many decline going to England on any terms. Freights are, in consequence, locking up. Should this state of things continue much longer, it will be questionable whether any ship can leave our harbour for England at all. Landed and household property have become depreciated at least 75 per cent. on their former value. Our mining and smelting interests are suffering severely; most of the men from the works of the Patent Copper Company and the Burra mines are leaving for the diggings. Burra shares have fallen from their maximum point of 225*l.* to 50*l.* per share, and will decline still further. Fortunately, out of the 15,000 bales of wool which we annually ship to England, about 12,000 of this season's clip have already gone, leaving only 3,000 bales or so to be shipped; and it will be no easy matter to get the remainder away.

"The next wool season is likely to be a trying one to the flock-owners, as their shepherds are all leaving; and we fear there will be a great falling off in the export of this staple from these colonies during the ensuing season. When we consider that Australia furnishes half of the

entire quantity of wool imported into Great Britain, this is of serious consequence, and must influence the home market.

"Although gold in large quantities find its way here from Victoria, it nearly all goes back again, owing to the determination of our banks not to allow purchasers of gold to draw against shipments of this article. The consequence is, that all the diggers who have returned to the colony, however much inclined to remain here and invest their earnings, are soon obliged to leave us again when they find that their gold-dust and nuggets have no exchangeable value with us. This has produced the most baneful effects on business. Our merchants and tradesmen have been petitioning and remonstrating with the Governor, praying to have some kind of an assay office established, where an exchangeable value might be given to the gold, by converting it into ingots of a certain value, which would circulate as other coin. Although this petition met with a cool reception, it is now all but certain that it will be granted in some modified form; nothing else could save this colony from the verge of utter ruin—for a length of time at least—though eventually we have little to fear but that we shall find South Australia in a better position than ever, owing to the many advantages she has over the other colonies in her mines and agricultural productions.

"All practical geologists are struck with the similarity of our auriferous indications to those of Bathurst and Mount Alexander. Probably at some future period gold will be found here in equal abundance.

"Quotations for all kinds of merchandize are nominal, with nothing doing but for actual requirements, the greater part of our usual imports being now unsaleable; and nearly all shipments coming here are transshipped to Melbourne. Although whilst penning this, an enactment has been passed by our Legislative Council declaring gold a legal tender in this province, at the rate of seventy-one shillings an ounce, still we cannot expect any improvement in business for the next twelve months at least. Extensive failures are of almost daily occurrence under the existing and unforeseen pressure of the times. Our banks are determined to act liberally to all their customers. Merchants and tradesmen are following the same rule towards each other. It is anticipated that this mutual forbearance between man and man will after some lapse of time restore confidence, when every branch of trade will resume its wonted tone of health and vigour, and much of the wealth produced by the gold diggings will find its way for investment to this colony, where every luxury and necessary of life may be produced and enjoyed in peace.

"After the present crisis is over, and confidence has been again restored, South Australia will experience a flow of wealth and prosperity unexampled either in present or past times by any colony acknowledging the sway of the British Empire."

OUR NATIVE SONGSTERS.

NEST-BUILDING—INSTINCT.

THERE is no season of the year which seems so full of life and beauty as the months of April and May. The lambs lie like patches of snow upon the meadow, now green with richest grass, and bright with its sprinkled daisies and buttercups. In the wood where the soft winds answer to the running brooks, the blue-bells are hanging, and the wind-flowers with their white and pink petals are all unharmed by the breeze. An odour of

primroses and violets comes from the banks, and leaves quiver and dance in the sunshine, and cast a chequered shadow on the pathway. There is a loud concert of singing among the green boughs, and every day it becomes more varied. Not only are our resident birds in full song, but those visitants which wing their way across the ocean to build their houses and rear their young in our woods, will all have reached us by the middle of May, and during that and the two following months all the minstrels of wood and glen, of mountain and river-side,—all may be heard and seen. It is the season of incubation, the period when the songs are sweetest; and when this is over many migratory birds will leave, and those which remain will be mostly silent, till the robin and wren begin their autumnal songs among the yellow leaves. It is not till late in May that the soft and plaintive cooing of the turtle-dove announces its arrival, and when its silver wings flit along through the trees, we may hear, too, the note of the fly-catcher, which is one of our latest visitors. Long since, before the trees had put forth a spray of leaves to meet the chilling winds of March, and when the sloe had a white flower here and there upon its branches, and the willow-tree bore already its balls of gold, the chiff-chaff had come to join its notes with those of our thrush and blackbird, when a bright day invited them to song. Then the whinchat was soon heard as its abrupt notes issued from the furze-clad common. Early in April came the redstart, and then followed swallows and martins, and we might say in the words of our earliest extant ballad—

"Summer is come in,
Loud sings the cuckoo."

There is life everywhere, and insects glitter in the sunbeam, and pursue their destined summer work:—

"Bird, bee, and butterfly—the favourite three
That meet us ever on our summer path!
And what, with all her forms and hues divine,
Would summer be without them? Though the skies
Were blue, and blue the streams, and fresh the fields,
And beautiful as now the waving woods,
And exquisite the flowers; and though the sun
Beam'd from his cloudless throne from day to day,
And, with the breeze and shower, more loveliness
Shed o'er this lovely world; yet all would want
A charm, if those sweet denizens of earth
And air, made not the great creation teem
With beauty, grace, and motion! Who would bless
The landscape, if upon his morning walk
He greeted not the feathery nations, perch'd
For love or song, amid the dancing leaves;
Or wantoning in flight from bough to bough,
From field to field? Ah! who would bless thee, June,
If silent, songless, were the groves,—unheard
The lark in heaven?"

And now the dwellers in the country can but remark how busy are the birds at nest-building. Away they fly with the scrap of wool from the sheepfold, or the feather from the farm-yard, or the moss from the bank, or the twig or lichen from the tree. In most cases, the labour of nest-building devolves on the female bird, and when her companion aids her, it is simply by carrying the moss, or wool, or grass, to the appointed spot, while many birds fail in even rendering this assistance. The hen-bird collects her materials, and weaving a framework of dried stems and twigs,

she by various movements of her body moulds the other substances to their destined form. There are birds which, like the cuckoo, make no nests, but leave to others the care of providing a dwelling for their little ones: but many nests are framed with exquisite skill, and so exactly fitted for the circumstances in which they are to be placed, that we may say with Hurdis, of one of them, "It wins my admiration." Great indeed is the beauty of some of these structures, especially of those of the finches. That of the chaffinch or the goldfinch, of hemispherical shape, and formed of a compact framework, with its warm neat lining, is made with great skill and taste, and would lead one to infer that its builder had a love for the beautiful. The nest of the noisy magpie suggests the idea that its owner had an eye to the dangers which awaited it, and so made a house adapted for defence from its enemies, and guarded so well with thorny branches, that one might as well attempt to seize a furze-bush hastily, as to grasp at it. The wren has the aperture of its nest at the side next to the light: and the blackbird building so early in spring, not only seeks the shelter of the evergreen boughs, but makes a firm wall to its nest, impervious to wind and rain. The swallow knows how to glue its cradle in the angle of the window or chimney, or beneath the eaves of the house; and constructs a solid dwelling of clay, thickened with straws and feathers, and well lined with a downy quilt. Many of the birds of other lands are even more ingenious architects than our native songsters. Thus the pretty Penduline Titmouse of the south and east of Europe, frames a nest of remarkable elegance, woven of down which it gathers from the catkin of the willow or poplar, or from the ball of the dandelion or the thistle-tuft. Of these it manufactures a kind of felt or cloth, which it strengthens by the fibres of plants, while it lines its nest with a thick cushion of the down in its natural state, making a ledge over the aperture of the nest, which it can close at will, and fastening the structure to a branch suspended over a running stream, so that the rats or snakes which frequent the waters, cannot reach it. There are birds of the East which build chambers in their nests, and others which ingeniously sew leaves together for a covering to their little homes; others are perfect basket-makers, and weave so well, that the birds have received the name of those artisans, whose fabrics their nests resemble.

The nests of our song-birds vary sometimes a little, in consequence of the situation or the materials which are to be found in the neighbourhood in which they are built; yet from one generation to another, they are framed with so much regularity that a practical ornithologist can tell at once, if he sees an empty nest, what species of bird was the architect. As James Montgomery has said:—

"The nightingale that dwelt in Adam's bower,
And pour'd his stream of music through his dreams;
The soaring lark, that led the eye of Eve
Into the clouds, her thoughts into the heaven
Of heavens, where lark nor eye can penetrate;
The dove that perch'd upon the tree of life,
And made her bed upon its thickest leaves:
All the wing'd habitants of Paradise,
Whose songs once mingled with the songs of angels,
Wove their first nests as curiously and well
As the wood minstrels in our evil day,
After the labours of six thousand years,
In which their ancestors have fail'd to add,

To alter, or diminish anything,
In that of which Love only knows the secret,
And teaches every mother for herself,
Without the power to impart it to her offspring."

That it is instinct, and not teaching which enables the bird to build its nest, we know from the fact that birds reared in cages where they have never seen the usual dwellings of their species, will, as far as materials and circumstances admit, form a nest like that of their kind. Some slight variations, according to necessity, may be seen; yet, as Mr. Knapp has observed, there is little deviation. "Birds," says this writer, "which build early in spring, seem to require warmth and shelter for their young. Thus the blackbird and thrush line their nests with a plaster of loam, perfectly excluding by these cottage-like walls, the keen icy gales of our opening years; yet if these are destroyed, they will build one in later summer, exactly like it, at a time when coolness would seem desirable."

It is truly wonderful and interesting to remark how the parental instinct works in the heart of the bird, altogether changing for a time its character and habits. Fitted for soaring, and restless and volatile beyond any other living creature, yet the hen-bird will sit hour after hour, and day after day, upon her eggs, and in some cases her companion will share in this domestic duty; while at all times the mother-bird must depend on the care of her mate for her food. The constant labour of feeding the nestlings becomes a most arduous one, owing to the great quantity which young birds consume; and as it chiefly consists at that time of the soft bodies of insects, both birds must search actively and labour constantly to afford the supply. Colonel Montagu, who watched the manner in which a pair of gold-crests fed their young, has recorded several interesting facts on this subject. He placed the nest, when the young were about six days old, in a basket in his study. The parent birds came to them; the male bird not having courage to enter into the room by the window, while the female braved all dangers, and at length would feed her young while this gentleman held the nest in his hand. The male bird always accompanied his mate, while she flew backwards and forwards, but never ventured beyond the window frame, and after a time never brought food in his bill. "At first," says this writer, "there were ten young in the nest, but probably for want of the male's assistance in procuring food, two died. The visits of the female were generally repeated in the space of a minute and a half or two minutes, or upon an average thirty-six times in an hour, and this continued full sixteen hours in a day, and if equally divided between the eight young ones, each would receive seventy-two feeds in the day, the whole amounting to five hundred and seventy-six. From examination of the food, which by accident now and then dropped into the nest, I judged from those weighed, that each feed was a quarter of a grain, upon an average; so that each young one was supplied with eighteen grains' weight in a day, and as the young ones weighed about seventy-seven grains at the time they began to perch, they consumed nearly their weight of food in four days' time at that period. This extraordinary consumption seems absolutely requisite in animals of such rapid growth. The old birds of this species weigh from eighty to ninety grains. I could always perceive by the animation of the young brood when the old one was coming; probably some low note indicated her approach, and in an instant every mouth was open to receive the insect morsel. But there appeared no regularity in the supply given by the parent bird: sometimes the same was

fed two or three times successively, and I generally observed that the strongest got most, being able to reach farthest, the old one delivering it to the mouth nearest to her."

Not only is the patience of the mother-bird required during the time of sitting on the eggs, but when the nestlings are hatched they require the warmth of her sheltering wings, both by day and night, so that for several days after she is unable to quit them lest they should die of cold. And now, too, the timid bird becomes courageous, and will brave any danger to protect or feed the nestlings. Instances are recorded in which the lark, usually so easily frightened, has fluttered before the fowler to call his attention away from her younglings; and many birds, like the blue titmouse, will follow the person who seizes the young, and amid wild screams will rush at the hand which bears away the nest. Whether or not the parent birds are able to give any instruction to their young, as to their mode of learning to fly, is doubted by some; but this is certain, that they watch over them, warn them of dangers, and never cease to aid and feed them, till their feathered wings enable them to provide for themselves.

SEA-SIDE PLEASURES.—No. III. (*continued.*)

A STRANGER walking through a Devonshire lane cannot fail to be struck with the curious wells that occur at every turn. The scarcity of running water makes every spring valuable, and wherever one is found it is carefully enclosed in a little house of its own, walls of loose stones being built around it on three sides, and covered with a roof. Various degrees of care and skill are of course bestowed on these edifices; often they are very rude, and resemble little grottoes; but sometimes they are comparatively spacious, the bottom deep and paved, and filled with pure water of crystal clearness, with steps for the children to descend and fill their pitchers, and with the entrance protected by a low slab. Such an one I observed at a farm called Houseworth, as we proceeded on our way; a regular little house with "bungalow" roof, built not as usual in the hedge, or road-side wall, but in the midst of an open space in the road itself, and hence a conspicuous object to the passenger. It is very refreshing to peep into one of these grottoes on a hot summer's day; the face is immediately conscious of the grateful coolness, and the eye gazes with pleasure on the elegant ferns that droop in curves from the walls, and the liverwort that spreads in a compact coat of dark glossy green over the interior, nourished into great luxuriance by the congenial darkness and moisture.

And so, through farms and fields, opening many gates in our course, we came to the ancient village of Morte or Morthoe, a little obscure place, almost at the end of the world, being built close to the corner where the coast abruptly bends to the southward. But before entering the village I wished to see Rockham Bay, a narrow path to which leads off from the main road. Alighting from my humble steed, therefore, I proceeded about a mile, through fields, by a winding and not particularly interesting foot-path, till I suddenly descended into the romantic bay.

It is a little cove, wild and silent, no trace of the vicinity of man being perceptible. Cliffs of hard blue slate surround it on three sides, and the ground itself, the *floor* of the enclosure, is formed of the same slate, which, though uneven, has been rubbed smooth by the action of the waves. A coating of sand and shingle fills the hollows, but everywhere the slate crops

out, and runs in bristling ridges far away into the sea, where it is covered with a rude drapery of yellow sea-weed.

Having walked round the foot of the cliffs, and peeped into some of the narrow caves with which they are perforated, thinking of Charlotte Smith's lines, and responding to them,—

> "'Tis pleasant to wander along on the sand,
> Beneath the high cliff that is hollow'd in caves,"—

I strolled down to the water's edge. In one place I found a large bed of minute pebbles, most of them of white quartz, beautifully smooth, regular, and pure, looking exactly as if a cart-load of comfits and sugar-plums had been shovelled out there, or as if all the humming-birds' eggs in South America had been collected into one spot. Then I explored the rocks, and examined the tide-pools, which I should take to be peculiarly favourable for a naturalist's researches at extreme low water; but the tide was not now sufficiently out, and my time scarcely allowed me to do more than take a hasty glance at the place. Yet I did not leave it without obtaining a zoophyte of curious structure and beautiful form, which I will describe.

As I peeped about among the pools that lay clear and calm in the hollows of the rocks, my eye was attracted by a tuft of that feathery sea-weed, *Ptilota sericea*. It is not uncommon, fringing the perpendicular sides of the ragged ledges and outcropping strata, near the lowest tide-

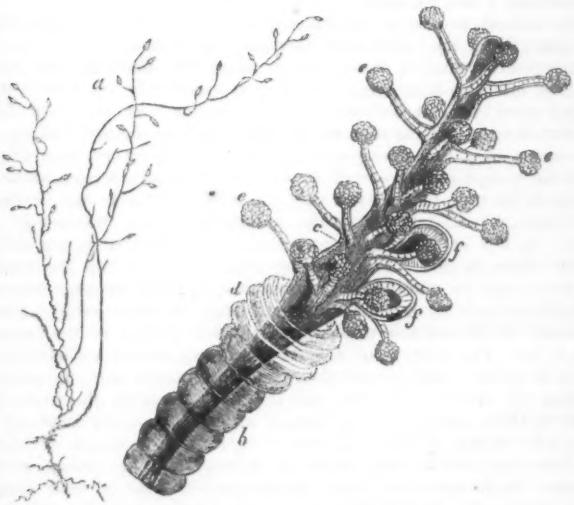

Fig. 1. Coryne ramosa. *a*, natural size; *b*, a polype magnified; *c*, the head; *d*, the tube; *e*, the tentacles; *f*, the egg-capsules.

mark, wherever the form of the succeeding ledge allows the water to lie in a long, narrow, and sharp-bottomed pool. The colour of this sea-weed is not particularly attractive, for it is of a dull brownish red, and the fronds have frequently a ragged appearance; but if it be carefully spread out in a saucer of sea-water and examined, there will always be some branches to

be found of a livelier hue than the rest, and these will best show the exquisite plumose structure. Each branchlet resembles a tiny feather regularly pinnated; and if examined in a microscope of rather high power, each of the ultimate nerves of the pinnation, as well as the vanes or pinnules themselves, are seen to be composed of a single row of red transparent cells, of an oblong cylindrical form, sometimes swollen in the middle, attached to each other end by end, looking something like the backbone of a fish, when all the ribs and spines are detached.

But what attracted me on this tuft of sea-weed, whose soft feathery branches were hanging from the sides of the rock into the calm and dark pool, was a slender branching filament that was evidently a parasite. I separated the *Ptilota* with as much of the base as I could, and put it into a broad-mouthed phial of clean water. I could not wait till I got home, but looked out for a dry smooth stone on which to sit, pulled out my pocket lens, and looked at it. To my gratification it was a polype that I had several times vainly wished to find. I had no difficulty in recognising its similitude to Mrs. Johnston's beautiful figure of *Coryne pusilla* in Brit. Zooph. pl. ii. (2nd edit.), though I think it rather belongs to the species distinguished as *ramosa*.

It was not, however, until I could institute a closer examination of it at home, that I fully apprehended its curious structure or its elegant beauty; and this, by the aid of a sketch that I immediately made of its microscopic appearance, I will endeavour to convey to you.

The animal, as seen by the naked eye, looks like a very minute branching plant (fig. 1, *a*). It is altogether about as thick as fine sewing-cotton; an irregularly winding thread creeps along the frond of the sea-weed, clinging firmly to it as it goes, yet not so tenaciously but that it may be pulled away without dividing. This creeping root sends off frequent rootlets, which, crossing each other, appear to anastomose, making a sort of network of a few oblong areas. Free stalks shoot up here and there from the creeping stem, one of which in my specimen is upwards of three inches in length; they show a very slight disposition to ramification, but send forth, at short intervals, the polype-branchlets, irregularly on all sides. A few of these are compound, one branchlet giving origin to another from its side. The creeping fibre, the stalk, and the branchlets are seen under the microscope to be tubular, and the two latter are marked throughout their course with close-set rings, or false joints, apparently produced by the annular infolding of a small portion of the integument (fig. 1, *b*). The tube is of a yellowish-brown colour, sufficiently translucent to reveal a core or central axis of flesh, running along its centre, and sending off branches into the polype-branchlets, from the open tips of which the flesh emerges in the form of a thickened oblong head (*c*), somewhat club-shaped, whence the name *Coryne* (from κορύνη, a club), which has been assigned to this genus by naturalists. The tube, or sheath, becomes membranous, or I think gelatinous (like that of some *Rotifera*), at its margin, the ultimate three or four rings being evidently soft, scarcely consistent, viscid (entangling extraneous matters), almost colourless, of undefined outline, and larger than the rest (*d*). The polype-flesh, which is very slender within the tube, enlarges rapidly as it emerges. The club-shaped head of the polype is studded with short tentacles (*e*), of curious and beautiful structure. They vary much in number on each polype, but the full complement appears to be from twenty-five to thirty; they are arranged in somewhat of a whorled manner, in four or five whorls, which are how-

ever (especially the lower ones), often irregular, and scarcely distinct. Four tentacles usually constitute the final whorl; about six the next, the others respectively contain seven or eight, and ten or twelve. The tentacles spring from the axis with a graceful curve; they are rather thick and short, when contracted, but slender when elongated, nearly equal in diameter, except at the termination, when each is furnished with a globose head. This head (see fig. 2) is studded with minute tubercles on every part, which reflect the light, and which, viewed by transmitted light, are seen to be the terminations of numerous oval cells or follicules set in a divergent manner around the centre. Each tubercle is tipped with a minute bristle. The neck or body of the tentacle is perfectly transparent, pellucid-whitish or nearly colourless, and appears to be a tube with thin walls, slightly hairy on the surface, but containing a colourless thickish axis, freely permeating its centre, marked with delicate parallel rings. The globose knobs at the tips of the tentacles remind me of the unexpanded blossoms of an *Acacia*: they are generally tinged with pale red, and in some polypes, especially terminal ones, they are of a fine rose-colour, and are very pretty.

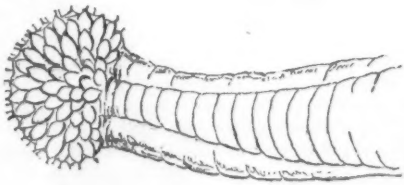

Fig. 2. A tentacle much magnified.

The tentacles are endowed with the power of free motion, and they frequently throw themselves to and fro with considerable energy: when perfectly at ease they are carried projecting nearly at right angles from the polype, but are more commonly curved up towards it. The whole polype can be also tossed from side to side at pleasure. The tentacles are contractile and extensile to some extent; for if the animal be taken out of water for an instant, and again replaced, these organs are found to be shrunk up to less than half of their former length. In a few minutes they recover their extension.

Some of the polype heads are furnished with organs of another kind Among the tentacles, chiefly of the lower whorls, are seen one or two oval bodies (fig. 1, *f*), about twice or thrice as large as a tentacle-head, which are attached by short foot-stalks to the polype body. They are composed of a clear jelly-like granular mass, with an oval dark nucleus in the centre, connected with the attachment: the nucleus is of an orange or yellow hue, and is coarsely granulated. In some that I kept, this dark nucleus became larger, until it almost filled the interior; but the death of the animals prevented my seeing the full development. These are egg-capsules, for I have since had a specimen which produced a great number (between twenty and thirty) of soft clear eggs from each capsule; but I have not succeeded in breeding the polype from the egg.

In other circumstances, however, the *Coryne* is said to produce a very different offspring, which is neither an egg nor a representation of itself, but a little active swimming creature, exactly resembling an animal of

another class, in fact, a tiny *Medusa*, or sea-blubber! The phenomena connected with so remarkable a fact are not thoroughly investigated; but they are among the most interesting and the most astounding of those that have occupied the attention of modern naturalists. Thus far it seems to be incontrovertibly proved, that some polypes, of which the *Coryne* is one, produce at one time young which resemble *Medusæ*, and that these produce young which are like the original polypes; and thus the races are continued in regular alternation. Any particular individual bears no resemblance to its mother or its child, but is exactly like its grandmother and its grandchild; while its mother, its child, and its great-grandchild are alike among themselves.

(*To be continued.*)

THE WHITE SHIP.

I TOLD you, in a former story, that William the Conqueror had three sons, the youngest of whom was Henry, afterwards Henry the First of England. This king had only one son, named William. You may suppose he was very fond of him, and as he intended to leave the crown to him, he had him carefully instructed in everything thought necessary to make a good and wise king. Prince William was very brave, and his father was so proud of him he thought he never could do enough to secure his right to the thrones of Normandy and England, and to make him rich and powerful. All his hopes were centred in him; he was his pride, his joy, his all! When the young prince was about eighteen years old, his father took him over to France, that the barons of Normandy might pay homage to him as their future king. Here he was feasted, and courted, and had so much honour paid him, he thought it a fine thing to be a prince, and looked forward with joy to the time when he should be a king. Alas! that time never came. After staying some months in Normandy, King

Henry thought it prudent to return to England. He accordingly gave orders for all to be ready to embark on a certain day. On that morning all was commotion in the little town of Harfleur. The people were hurrying down to the beach to see the fleet set sail for England, and to wish it a prosperous voyage. Men, women, and children were hastening to one point, but, though the vessels were all ready for sea, yet there was no sign of their immediate departure; and the crowd anxiously turned their eyes from the ships, to watch the roads by which the royal party were expected to approach. For some time they watched in vain; but, at length, a gay and gallant train of nobles, mounted on prancing steeds, with banners flying and music playing, gave notice of the coming of England's king.

"Ah! there he is!" exclaimed one of the gazers; "here he comes! you may know him by his height, and the nodding plume in his helmet; see, he is on a white horse, with silver trappings; and how kindly and affably he speaks to all those near him, and how handsome he looks! Oh! he is a noble king!"

"Truly he is!" replied a neighbour; "a king to be looked at; but, tell me, who is that fine-looking youth by his side, friend Pierre? he on the bay horse that he rides so well; now he speaks earnestly to the king, who smiles kindly on him. Oh! he reminds me of my own dear boy, so full of life and spirits; who is he, Pierre?"

"Why, that is Prince William, the king's only son, and one that any father might be proud of. They say that the love which King Henry bears to that boy is so great, he would rather lose the brightest jewel of his crown than that a hair of his head should be hurt. His hopes and joys are all wrapped up in him, and he seems happy only in his presence. In short he idolizes him."

"Then he does wrong, friend Pierre, he does wrong; we should make an idol of nothing on earth. I had a son once, and I made an idol of him; but my fair-haired boy was taken from me, and laid low in the grave; then I felt I had done wrong;" and the old man brushed a tear from his eye.

On came the royal cavalcade, courtiers, and nobles, and fair ladies—and the king and prince the centre of attraction. On a spirited palfrey, close behind Prince William, rode his sister Maude, and every now and then he turned to speak to her in words of kindness and encouragement.

"See, dear Maude, the sun is bright, and the wind fair, and the sea calm as even *you* could wish. The voyage will be short and prosperous, and ere many hours are past you will be in England."

"Which of those vessels are we to embark in?" Maude timidly asked.

"In the one to the right of the others; you may know her by the white paint on her sides; she is called 'The White Ship.'"

"She is a fine ship," observed King Henry, "and commanded by an able captain. The father of Fitz-Stephen carried over the Conqueror to England, in his first descent on those shores, and now he will have the honour of conveying the grandson of the Conqueror. You will have all your young friends with you, my dear son, nobles and knights, with Maude and all her ladies! a gay and joyous party, and a fit retinue for the future King of England and Normandy. I am getting rather old to join so many youthful spirits, and should but be a drawback on your gaiety, so I will precede you in another vessel; the ships will all sail together, and often will my eyes turn towards one of them, for the hours will seem days till I meet thee again, my loved son."

The embarkation now took place. King Henry took an affectionate farewell of the prince, and desiring Fitz-Stephen to follow immediately in The White Ship, proceeded on his voyage.

Vessel after vessel spread its sails and followed the king, yet still The White Ship delayed. The crowd from the shore, who had been watching the departure of the fleet, and had seen Prince William and his retinue embark in The White Ship, wondered that she gave no signs of sailing. There certainly was a great deal of activity on board amongst the sailors, but it did not appear to be the steady activity of preparation for a voyage.

"Ah! here comes a boat from the ship," cried Pierre; "now we shall know why they delay. Why, how is it," he called out to the sailors, "that your captain does not put about and follow the fleet?"

"All in good time," answered the sailors, laughing; "the prince has ordered some wine to be given to the ship's crew, to drink success to the trip, d'ye see. He has a liberal heart and a free hand, fit for a prince like him; our captain, Fitz-Stephen, was just drinking his health in a bumper as I left, and I heard him say 'The White Ship would soon overtake the fleet,' as of course she will, such a fast sailer."

"Are all the passengers on board?"

"All but one, and we are now come for him; Bertould the butcher, from Rouen. We are a goodly company in the ship, full three hundred, and right proud we are of our cargo. Come along, Bertould, I must have another taste of that good wine before we sail."

The boat returned, and after some time The White Ship spread her canvas and departed. In order to overtake the other vessels, which had now proceeded some distance, Fitz-Stephen crowded all sail, and by every means endeavoured to increase the speed of his ship. Prince William and his gay companions urged him on, and the vessel dashed swiftly through the water. But the fatal effects of so much wine was now visible on the sailors; many were intoxicated, and incapable of doing anything. Still the wind was fair, and The White Ship, making rapid progress, was soon out of sight of land. Fitz-Stephen, who had also partaken freely of the wine, was not so watchful as he should have been, and the prince and his companions were all gaiety and merriment, when a sudden and dreadful shock was felt throughout the vessel, and the next moment the fearful cry arose, "The ship has struck! we are lost!" Then came shrieks and cries of agony, mingled with groans of despair; for a few moments all was wild confusion and tumult, till the voice of Fitz-Stephen was heard high in command, "Let down the boat! Save the prince! if all else perish, the prince must be saved!"

Hastening to execute his own orders, he caused the boat to be lowered, and, hurrying Prince William and a few of his immediate companions into it, desired the sailors *instantly* to push off, and convey the precious charge to the shore, from which they were not very far distant. The sailors plying their oars with vigour, in a minute were several yards from the sinking ship, when a piercing cry was heard, of "Oh! my brother, save me! leave me not to perish!"

The prince knew his sister's voice; he saw her leaning over the ship's side, with outstretched and imploring arms. "Save my sister!" he exclaimed to the sailors, "put back and save my poor Maude!"

They declared they dared not, the danger would be so great.

"I care not for the danger," said the prince; "I *must* save my sister; put back I command you!"

They did so, and what they had foreseen took place; the boat had scarcely touched the ship's side, when such numbers leaped into it that it instantly sunk, and the prince, his sister, and all it contained, perished in the deep waters!

The cries of the unfortunate people on the wreck were heart-rending as they witnessed this awful catastrophe, and saw all hope for themselves cut off; their shrieks reached even to the king's ship, though he little thought from whence they came.

Then arose a scene of terror that I will not sadden your young hearts by describing; and the hours rolled on, and the last one came; and The White Ship went down with all that gay and noble company! Oh! how many young hearts, bounding with life and hope, had left Harfleur that morning! and now where were they? Of the royal, the noble, the young, and the brave, who remained to tell the mournful tale?

One man was clinging to the floating mast when that sad hour was past, clinging with still a hope of life—it was the butcher, Bertould. As he gazed at the scene of desolation around, he thought he perceived some one buffeting with the waves. He hailed him, and was gratified to observe that, though much exhausted, the poor fellow had just strength to reach the mast. It was Fitz-Stephen, the captain of the ill-fated vessel. As soon as he had recovered himself sufficiently to speak, he exclaimed,

"Alas! Bertould, a sad sight! a sad sight! There went down a gallant ship and a brave crew! I thought, surely that rock had been two miles to leeward of us; but it was the wine that deceived me, Bertould, the wine! Well, we must take comfort; the prince is saved; and that is more than enough to counterbalance the loss of twenty vessels. I should never have forgiven myself if I had not seen him safe."

"Alas!" said Bertould, "he is gone down with the rest."

"Gone! drowned! what do you mean? I put him myself into the boat! he *must* be safe."

"But the boat returned to the ship, captain. Prince William insisted on rescuing his sister; the boat was crowded and all perished!"

"Then I perish too!" exclaimed Fitz-Stephen; "I cannot outlive my prince!" and loosening his hold of the mast, in an instant he had disappeared.

Bertould was much shocked; he was now the only living being out of that number of three hundred, a short time since so full of life and spirits! In that ship had gone down a hundred and forty young noblemen of the first families in England and Normandy, with many ladies of high rank. What a striking illustration this sad event was, of those words from Holy Writ,—"Go to now, ye that say, To-day or to-morrow we will go into such a city, and continue there a year, and buy and sell, and get gain; whereas ye know not what shall be on the morrow. For what is your life? It is even a vapour, that appeareth for a little time, and then vanisheth away."

The poor butcher remained in his distressing and perilous situation for many long and weary hours: night came on, and he could only look for aid to Heaven. His thoughts were most melancholy, as he pondered on his own chance of escape, and the fearful scene he had witnessed. Even if his life were spared, what terrible tidings he should have to tell! Anxiously he watched for day-break, and keenly did he cast his eyes over the waters, to see if there were any help for him. As he looked earnestly in one direction, he perceived, to his joy, a fishing-boat coming towards

him; he shouted for assistance with all the energy of despair, and was heard after some time, for the wind was fair and the sea calm. The fishermen rescued him from the mast, and saw with astonishment and grief all that remained of the White Ship."

"That is a melancholy story indeed!" said Florence; "but, dear aunt, tell me, how did the poor king bear the dreadful tidings?"

"The sad news was conveyed to England the next day, and great was the sorrow of all who heard it. Many a noble house was filled with mourning and lamentation; but the loss of the prince and the terrible blow it would be to the king, seemed to make other's griefs small in comparison to his. Though nothing else was spoken of, no one dared to tell King Henry. He had not left the coast, but was still at Southampton, anxiously waiting the arrival of his son. For three days none could summon courage to break the dreadful news to him. At last a boy was desired to fall at his feet and tell him The White Ship was lost.

"The poor king, on hearing this, fell senseless to the ground, and for a long time his grief knew no bounds. Indeed, so bitter, so overwhelming was the stroke to him, both as a king and a father, that from that hour to the day of his death, he was never seen to smile again—though he lived for fifteen years afterwards."

JOHN BRADFORD,

MARTYR, JULY 1, 1555.

HE was chaplain to Bishop Ridley, and a prebendary of Westminster. In piety and intrepidity of character he was not surpassed by any one of our noble army of martyrs. When Queen Mary came to the throne, Bradford was one of the first who was marked for destruction. Having been examined in the consistory court of St. Mary Overy, now St. Saviour's Southwark, and handed over to the secular power, while confined in prison he said, "Death I daily look for, yea hourly, and I think my time be but very short, therefore I had need to spend as much time with God as I can, whilst I have it, for His help and comfort."

If any inquired of his keepers what appeared to be the state of his mind when free from extraordinary excitement, whether anxiety rested on his countenance during his days of solitude, or whether his sleep was disturbed and irregular, no answer could be returned, but that peace beamed on his waking countenance, that his sleep was calm and sweet, and that he spoke with the greatest composure of his approaching death. As far as it might be said of one still clothed with mortal flesh, and therefore encompassed with infirmity, he could not be shaken, for his strength was the living God, upon whose wisdom and love he so implicitly relied, that he felt sure of protection and support, of grace for each day's trial, and of more grace in proportion as his necessities might be greater. On one occasion he rose from his bed about three o'clock in the morning, and betook himself to reading and prayer. It was on his last earthly Sabbath that he was thus early in communion with God, and a few more hours were to introduce him to the enjoyment of an endless Sabbath, in which he should no more see as through a glass darkly, but face to face. In the course of the day he had much conversation with a friend, who occupied the same chamber, concerning death and the kingdom of heaven, and "the ripeness of sin in that time."

When the tidings were announced that he must die to-morrow, Bradford uncovered his head, and, lifting up his eyes to heaven, said, "I thank God for it; I have looked for the same a long time, and therefore it cometh not now to me suddenly, but as a thing waited for every day and hour. The Lord make me worthy thereof." Presented with his martyr dress of white, he took occasion from it to pray that he might be found clothed in the wedding garments. Arrived at Smithfield, the place appointed for his martyrdom, Bradford embraced first a faggot and then the stake, and raising his hands and eyes towards heaven, he exclaimed, "O England, England, repent thee of thy sins! Beware of idolatry! beware of false antichrists! take heed that they do not deceive thee." Embracing the reeds with which he was now surrounded, he uttered these last words, "Strait is the way, and narrow is the gate that leadeth to eternal salvation, and few there be that find it." The fire was kindled, and the spirits of Bradford and his fellow-martyr, Leave, those constant servants of the Lord, were set free to wing their happy flight into the presence of Him whom they had so boldly and faithfully confessed on earth.*

THE SPIDER—AS AN EXAMPLE OF PERSEVERANCE (*continued*).

The situations which spiders select for hanging their nets are various. Some prefer the open air, amid shrubs or plants, where flies find both food and sport. Other spiders lodge in the corners of windows or rooms, where they are sure of prey; many weave their nets in stables and out-houses, and even in cellars and deserted places, which would scarcely seem to afford a single fly. Indeed where the busy hum of man is not heard, and where the labours of the housewife are not seen, the spider loves to take up her solitary abode. Mr. Kirby says that "the Jews, in one of the fables with which they have disfigured the records of Holy Writ, relate that the reason why Saul did not discover David and his men in the cave of Adullam (1 Sam. xxiv. 4), was that God had sent a spider, which had quickly woven a web across the entrance of the cave in which they were concealed; which being observed by Saul, he thought it useless to investigate further a spot bearing such evident proofs of the absence of any human being."

Mr. Jesse has recorded an instance where two spiders formed their webs within a drawer, and continued to occupy the opposite corners of it for *thirteen* years. During the whole of that time the drawer was used exclusively for soap and candles, and was always kept closed and locked except when opened to put in or take out those articles. The spiders were constantly in the same position, in a hole in the inner corner of their webs, and seldom showed more of themselves than their two fore legs projecting outwards.

Most persons will have remarked the difference between the web of the spider which inhabits the house, and that which seeks its prey in the garden. The former is a *weaver*, her web being of a gauze-like texture, as if woven; but to the latter has been given the grander title of *geometrician*, from the circumstance that it forms, not a web, but a net composed of a series of concentric circles, united by radii diverging from the centre, the threads being remote from each other.

* Biog. Brit., and Life of John Bradford, by the Rev. R. Hone, Vicar of Hales Owen.

The weaving spider, in beginning her web, often chooses the corner of a room, and takes care to secure a retreat should she be assailed by a powerful enemy. She first presses her spinners against one of the walls, thus glueing to it one end of the thread. She then walks along the wall as far as the opposite limit of the web, while the thread lengthens behind her, and there fastens the other end, pulling it in order to be sure that it is tight. As this thread is to form the outward margin or salvage of the web, it is strengthened by two or three more threads drawn along it and fixed like the first. From this outer line she draws other threads in various directions, filling up the intervals by running from one to the other, and connecting them by new threads until the whole rapidly assumes that gauze-like texture so well known in every house.

These webs present merely a simple flat surface; but to those which are found in out-houses, or among bushes in the open air, a very ingenious addition may be noticed. From the edges and surface of the main web, the spider carries up a number of single threads often to the height of many feet, joining and crossing each other in various places. These lines are not unlike the tackling of a ship, and the flies seem unable to avoid directing their flight across them; when, becoming slightly entangled, they make desperate efforts to escape, which generally have the effect of throwing them into the web, stretched below for their reception, when their doom is fixed.

But the net is not yet complete. The spider next makes a small silken apartment below the net, and quite out of sight, where she waits for the expected game; and that she may know when any is caught, a number of threads proceed from the edge of the net to that of her den, which, by their trembling, inform the spider that a fly is caught, and at the same time serve as a bridge, over which she can instantly pass to secure it.

The Geometric Spider usually suspends her net from trees, shrubs, plants, or buildings, in places where insects abound. Her first operation, in most instances, is to form boundary lines so as to enclose an area, the figure of which appears to be a matter of indifference; for the little geometrician seems to be well aware that she can as readily describe a circle in a triangle as in a square. She forms these boundary lines by proceeding along the objects immediately surrounding the space destined to be occupied by the net, and attaching to several points a line drawn out after her in her passage from one to another. She strengthens these lines with a few additional ones, and finally makes them tight by fixing in different directions, numerous smaller threads. Having thus completed the foundations, she next begins to fill up the outline. Fixing a thread to one of the boundary lines, along which she walks, she guides the filament produced in her progress with one of her hind feet, that it may not touch in any part and adhere prematurely, and crossing over to the opposite side, she there attaches it firmly. To the middle of this diagonal thread, which is to form the centre of the net, she fixes a second, which, in like manner, she conveys and fastens to another part of the lines encompassing the area. Along this last-formed thread she returns, drawing out another after her, which, as she does not employ any means to keep it distinct, becomes connected with that on which she is advancing, and is at last glued by its extremity to the centre of the net. In this manner, but without observing regular order in her progress, she forms about twenty or thirty rays composed of double lines, passing from the centre to the circumference, and giving the net the appearance of a wheel. She then proceeds to the centre,

turns herself round, and pulls each ray with her feet to ascertain its strength, breaking such as seem defective, and replacing them by others. She then produces, round the centre of the net, a spiral line, extending thence to the circumference, and intersecting the rays at distances gradually widening from the centre, attaching it to them by pressing her spinners against them. This spiral line serves as a temporary scaffolding for the spider to walk over, and also to keep the rays properly stretched during her succeeding operations. The spiral line, the rays and the marginal lines, are all composed of adhesive silk; but a spiral line has now to be spun from the circumference around the centre, which may be regarded as the most important part of the snare. It consists of a fine thread, closely studded with minute dew-like globules, which are of a gummy nature, as is proved by their adhering to the finger, and retaining dust thrown upon the net, while the other rays and threads remained unsoiled. These viscid threads alone retain the insects which fly into the net; and as they lose their adhesive property by the action of the air, it is requisite that they should be frequently renewed,—a process not neglected by the spider, who is quite conscious of its necessity. Placing herself at the circumference of the net, and fastening her viscid thread to the end of one of the rays, she walks up towards the centre, till she comes to the last turn of the unadhesive spiral line, along which she passes to the adjoining ray, at the same time drawing out the thread with the claws of the hind leg, nearest to the circumference. She then passes the thread to the claws of the other hind leg, and going down the ray towards the circumference, she places the foot of the unemployed hind leg on that point of the ray to which her thread is to be attached, and bringing the spinners to the spot, there makes it secure. The precise place in each ray at which to fix the thread is always ascertained by touching with the hind feet the marginal line, or the last-formed turn of the viscid spiral line. As this last line approaches the several turns of the unadhesive spiral line, the spider bites away the latter, being sensible that they are no longer of any use to her; and this fact explains why they are never seen intermixed with the turns of the former in finished nets. The spider now makes choice of some retired spot in the vicinity, and there constructs a cell, in which she may conceal herself from observation. From the centre of the net to this retreat she spins a line of communication, composed of several threads united together throughout the whole length, the vibrations of which speedily inform her of the capture of her prey; and here her labours end.

Mr. Foster, in the *Entomological Magazine*, relates a singular contrivance of the small garden-spider. "She had formed her web over the middle of a gravel-path, attaching the supporting threads to the paling on one side, and to a sun-flower on the other. The breeze was rather strong, and to keep her web steady, she had drawn up a small gravel-stone, though very nearly the size of her own body, which hung beautifully poised between two threads, about a foot above the path, and which answered the purpose she wished most admirably well; it swung backwards and forwards with the motion of the wind, but still was heavy enough to keep her web distended and steady." This circumstance has been noticed by other naturalists, but explained somewhat differently. The spider makes choice of a pebble in a gravel path as one of the *fixed* points for attaching the boundary lines; but as the work proceeds, the tension of the upper lines actually lifts the stone from off the ground, and being thus delicately hung like a pendulum, it swings to and fro in the breeze.

The spider has as yet been described only as forming her snare in places of easy access; but it is not uncommon to see nets fixed to objects between which the animal could not, in the first instance, have walked; for example, between distant plants growing in water. How, then, does the spider contrive to extend her main line, which is often many feet in length, across a stream? In answering this question, we have only to relate the surprising instances of patience and perseverance in this little animal, witnessed by the Rev. Mr. Kirby and other observers.

A large garden spider was placed upon a stick, about a foot long, set upright in a vessel of water. After fastening its thread (as all spiders do before they move) at the top of the stick, it crept down the side until it felt the water with its fore feet, which seem to serve the same purpose in spiders as the antennæ or feelers in insects. The spider then immediately swung itself from the stick (which was slightly bent), and climbed up by the thread to the top. This it repeated, perhaps, twenty times, sometimes creeping down a different part of the mast, but more frequently down the very side it had so often traversed in vain. "Wearied with this sameness in its operations," says the narrator, "I left the room for some hours. On my return I was surprised to find my prisoner escaped, and not a little pleased to discover, on further examination, a thread extended from the top of the stick to a cabinet seven or eight inches distant. Eager to witness the process by which the line was constructed, I replaced the spider in its former position. After frequently creeping down and mounting up again as before, at length it let itself drop from the top of the stick, not as before by a single thread, but by *two*, each distant from the other about the twelfth of an inch, guided as usual by one of its hind feet, and one apparently smaller than the other. When it had nearly reached the surface of the water it stopped short, and broke off close to the spinners, the smallest thread, which still adhering by the other end to the top of the stick, floated in the air, and was so light as to be carried about by the slightest breath." On bringing a pencil near the loose end of this line, Mr. Kirby found that it did not adhere from mere contact; he therefore twisted it once or twice round the pencil, and then drew it tight. The spider, which had previously climbed to the top of the stick, immediately pulled at it with one of its feet, and finding it sufficiently firm, crept along it, strengthening it as it proceeded by another thread, and thus reached the pencil.

(*To be continued.*)

THE SPANISH LADY.

Will you hear a Spanish lady,
How she woo'd an Englishman?
Garments gay, as rich as may be,
Decked with jewels had she on;
Of a comely countenance and grace was she,
Both by birth and parentage of high degree.

As his prisoner there he kept her,
In his hands her life did lie;
Cupid's bands did tie them faster,
By the liking of an eye.
In his courteous company was all her joy,
To favour him in anything she was not coy.

But at last there came commandment
For to set all ladies free,
With their jewels still adorned,
None to do them injury.
"O, then," said this lady gay, "full woe is me!
O let me still sustain this kind captivity!

"Gallant captain, show some pity
To a lady in distress,
Leave me not within this city,
For to die in heaviness:
Thou hast set, this present day, my body free,
But my heart in prison still remains with thee."

"How should'st thou, fair lady, love me,
Whom thou knowest thy country's foe?
Thy fair words make me suspect thee;
Serpents lie where flowers grow."
"All the harm I wish on thee, most courteous knight,
God grant upon my head the same may fully light!

"Blessed be the time and season,
That thou camest on Spanish ground;
If you may our foes be termed—
Gentle foe we have you found.
With our city you have our hearts each won,
Then to your country bear away that is your own.

"Rest you still, most gallant lady;
Rest you still, and weep no more;
Of fair flowers you have plenty,
Spain doth yield you wondrous store.
Spaniards fraught with jealousy we oft do find,
But Englishmen throughout the world are counted kind."

"Leave me not unto a Spaniard,
Thou alone enjoyest my heart;
I am lovely, young, and tender,
Love is likewise my desert;
Still to serve thee day and night my mind is prest;
The wife of every Englishman is counted blest."

"It would be a shame, fair lady,
For to bear a lady hence;
English soldiers never carry
Any such without offence."
"I will quickly change myself if it be so,
And like a page will follow thee where'er thou go."

"I have neither gold nor silver
To maintain thee in this case:
And to travel is great charges,
As you know in every place."
"My chains and jewels every one shall be thine own,
And eke ten thousand pounds in gold that lies unknown."

"On the seas are many dangers,
Many storms do there arise,
Which will be to ladies dreadful,
And force tears from watery eyes."
"Well, in troth I shall endure extremity,
For I could find in heart to lose my life for thee."

"Courteous lady, leave this folly,
Here comes all that breeds the strife;
I, in England, have already
A sweet woman to my wife;
I will not falsify my vow for gold nor gain,
Nor yet for all the fairest dames that live in Spain."

"O how happy is that woman
That enjoys so true a friend!
Many happy days God send her,
And of my suit I'll make an end:
On my knees I pardon crave for my offence,
Which love and true affection did first commence.

"Commend me to that gallant lady,
Bear to her this chain of gold,
With these bracelets for a token,
Grieving that I was so bold,
All my jewels in like sort, take thou with thee;
For they are fitting for thy wife, but not for me.

"I will spend my days in prayer,
Love and all her laws defy!
In a nunnery I will shroud me,
Far from any company:
But, ere my prayers have an end, be sure of this
To pray for thee and for thy love I will not miss.

"Thus farewell, most gallant captain,
Farewell to my heart's content!
Count no Spanish ladies wanton,
Though to thee my heart was bent:
Joy and true prosperity go still with thee!
"The like fall unto thy share most fair lady."*

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* "This pathetic tale"—which, whether viewed as a picture of human emotions under circumstances applicable to all times, or as a noble and discriminating tribute to English national character of the seventeenth century, "is," says a writer in the 'Edinburgh Review,' April 1846, "one of the most remarkable and perfect compositions of its class"—is taken from 'Percy's Reliques,' where it was printed from an old black-letter copy, corrected in part by the editor's folio MS.

A copy in black letter, printed by and for W.[illiam] O.[nley], and sold by the booksellers of Pye-Corner and London Bridge, and another in Roman character, are in the Roxburghe Collection, in the British Museum. It probably took its rise from one of those descents made on the Spanish coast in the time of Queen Elizabeth. Of its authorship nothing appears to be known. There is a tradition in the West of England, says Percy, that the person admired by the Spanish lady, was a gentleman of the Popham family, and that her picture with the necklace was, not many years ago, preserved at Littlecot, near Hungerford, Wilts, the seat of that family.

Another tradition pointed out Sir Richard Levison of Trentham, in Staffordshire, as the subject of this ballad, who married the daughter of the Earl of Nottingham, and was eminently distinguished as a naval officer in the expeditions against the Spaniards in the latter end of Queen Elizabeth's reign.

The discussions in the 'Edinburgh Review' called forth another claimant for the honour of his family. In a letter to the 'Times,' signed Charles Lee, the writer asserts that the hero of the tale was Sir John Bolle, and that the portrait of Sir John, drawn in 1596, at the age of 36, having on the gold chain given him by the Spanish Lady, is now in the possession of Thomas B. Borvill Esq., of Ravenfield Park, Yorkshire.